REMARKS

The Examiner rejected claims 1-27 as obvious (35 U.S.C. §103) over Le (U.S. Patent No. 6,272,605) in view of Frank (U.S. Patent No. 5,251,308). Applicants traverse these rejections for the following reasons.

Claims 1, 10, and 19 concern accessing a data set from one of two storage devices, each including a copy of the data set. These claims require: maintaining a flag for each storage device indicating whether a previous access attempt of the data set from the storage device failed; selecting the storage device having the flag indicating that no previous access attempt failed if the flag for the other storage device indicates that one previous access attempt of the data set from the storage device failed; and accessing the data set from the selected storage device.

Thus, the claims require that each of two storage devices maintain a flag indicating whether a previous access attempt of the storage device failed and selecting the storage device having the flag indicating that a previous access attempt did not fail if the flag for the other device indicates that a failure occurred.

In the Final Office Action, the Examiner responded to Applicant's assertion that Le does not teach the above claim requirements by discussing FIG. 6 of Le. (Final Office action, pgs. 2-3) A review of the cited FIG. 6 reveals that not only does Le not teach the above claim requirements, but that the system of Le operates in a different manner for different reasons than the claimed operations.

The cited FIG. 6 of Le discusses how to handle a recall request to recall data from a tape cartridge if the tape is already involved in processing another recall request. If a recall is pending against the tape, then the attempted recall will retry. In FIG. 6 of Le, if the attempted recall has a priority higher than a previously recorded priority, then the priority of the attempted recall request will be inserted in a record, and the attempted recall tried later. Any host that attempts an intervening recall of the tape before the previous attempted recall retries, will not be allowed to proceed unless that intervening recall request has a priority equal to or higher than the priority inserted in the record.

First off, Le nowhere teaches maintaining a flag for two different storage devices and then using the flag to select one of the two storage devices for accessing the data. In other words, the claimed flag is used to select one of two different storage devices having the same data sets. The cited Le nowhere suggests using a flag to select between two different I/O requests. Instead, FIG. 6 of Le is concerned with maintaining priority information for a requested recall if the tape is busy. Also, Le only discusses accessing data from a single tape cartridge, not two as claimed. Le nowhere teaches or suggests how to use a flag to select one of two storage devices for the access request, where both storage devices have a copy of the requested data. Thus, Le's maintaining of priority information for an attempted recall request does not teach or suggest the claim requirement of maintaining flags for different storage devices indicating whether a recall request against the storage device failed.

Further, the claimed flags on the storage devices indicate whether a recall attempt to one storage device failed. The cited Le nowhere teaches or suggests a flag that indicates whether an access attempt failed. Instead, Le discusses how priority information for an attempted recall request is maintained if the tape is busy. Applicants submit that the claimed flag that indicates whether an access request failed is different than the record of Le that indicates a priority of an attempted recall request that has to retry its recall request. The information in the record of Le is not used to select one of two devices for an access request, but is instead concerned with how to determine whether to allow an intervening recall request to proceed based on the priority of the intervening recall request and the priority in the record.

Not only does the cited Le fail to teach or suggest the claim requirements concerning maintaining a flag for each storage device and using the flag to select one of the two devices, but Le teaches away from the claim requirements. The claims are concerned with selecting one of two storage devices for data access. The cited Le is not concerned with selecting between one of two devices having the same copy of data, but instead discusses a technique for handling an attempted recall when the tape is busy with another recall. The solution of FIG. 6 is to store the priority of the attempted recall to determine whether to allow a subsequent intervening recall request to proceed. Thus, the cited Le not only nowhere suggests the above claim requirements,

but is also not concerned with selecting one of two storage devices that did not have a failed access attempt as claimed. Instead, Le is concerned with preventing an intervening request of lower priority from gaining access to a tape over a retried request having higher priority. See, Le, col. 3, lines 20-35

The Manual of Patent Examination and Procedure (MPEP) Sec. 2143.02, pg. 125 (8th Ed., Aug. 2001) states that:

> If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious.

Here, incorporating the above claim requirements into Le would change the principle of operation of Le. The claims require a flag indicating whether a recall request failed and using such flag to select a device against which to perform the next recall. If the tape system of Le were modified to have such a flag indicating whether a previous recall request failed, such a flag would change the principle of operation of Le. As discussed, the principle of operation of Le is concerned with handling contentious recall requests to allow higher priority recall requests to be considered before lower priority requests. See, Le, col. 3, lines 20-35. Modifying Le to have the claimed flag indicating whether a recall request to a tape failed would not allow Le to handle contentious recall requests. Instead, the claimed flag is used to select one of two storage devices to handle an access request. Thus, modifying Le to operate as claimed as the Examiner proposes would be improper because such modifications would change the principle of operation of Le and not allow Le to handle contentious recall requests as discussed in FIG. 6.

In sum, although Le discusses how to handle an attempted recall request when the tape is busy with another recall request, such discussion in Le nowhere teaches nor is concerned with the claim requirements of maintaining a flag for each of two storage devices indicating whether an access attempt failed and then selecting the storage device whose flag indicates that no previous attempt failed if the other storage device flag indicates that an access attempt failed.

The Examiner did not cite in the Final Office Action the secondary reference Frank as teaching the above two claim requirements. Because Frank is not cited to overcome the above discussed deficiencies of Le, Applicants submit that independent claims 1, 10, and 19 are

patentable over the cited combination of Le and Frank because such combination does not teach or suggest the above discussed claim requirements.

Claims 2-9, 11-18, and 20-27 are patentable over the combination of Le and Frank because they depend from claims 1, 10, and 19, which are patentable over the cited art for the reasons discussed above, and because they add requirements that in combination with the base and intervening claims from which they depend, further distinguish over the cited combination.

In the Response dated June 3, 2002 ("Response") to the first Office Action dated March 1, 2002 ("First Office Action"), Applicants provided specific explanations as to why dependent claims 2, 4-9, 11, 13-18, 20, and 22-27 provide additional grounds of patentability over the art cited in the First Office Action. In the Final Office Action, the Examiner did not address Applicants rebuttal to the rejections with respect to these dependent claims. For this reason, Applicants cannot ascertain the grounds on which the Examiner disputes the Applicants remarks and traversal of the rejection with respect to claims 2, 4-9, 11, 13-18, 20, and 22-27 made in the First Office Action. Applicants request that the Examiner provide specific grounds to respond to Applicants reasons for traversal if the Examiner decides to maintain the rejection of these dependent claims.

Applicants repeat below the additional grounds of patentability provided by dependent claims 2, 4-9, 11, 13-18, 20, and 22-27 that were previously set forth in the First Office Action.

Claims 2, 11, and 20 depend from claims 1, 10, and 19, respectively, and further require using a selection criteria to access one of the first and second storage devices that is unrelated to a value of the flag if the flags for both storage devices have the same value. The Examiner cited col. 6, lines 1-13 of Le as teaching the additional requirement of these claims. (First Office Action, pg. 3). Applicants traverse.

The cited col. 6 mentions that priority may be based on the source of the request. This section further mentions that the priority value and time stamp fields may only be checked if the wait flag for compared data structures are the same.

The claims require using a selection criteria unrelated to flags indicating a failure if both storage device flags indicating a failed access attempt are the same. The cited Le mentions

checking different values if a wait flag is the same. However, the claims only check different unrelated values if flags indicating a failed access attempt at both the devices are the same. The cited wait flag of Le is defined as a flag indicating whether the application originating the data request needs the data to proceed. (Le, col. 5, lines 50-53) Thus, the wait flag of Le nowhere suggests the claimed flag indicating a failed access attempt.

Accordingly, claims 2, 11, and 20 provide additional grounds of patentability over the cited art because the cited combination does not teach or suggest the additional claim requirements alone or in combination with base and any intervening claims.

Claims 4, 13, and 22 depend from claims 1, 10, and 19 and further require that a flag is maintained for each data set in the first and second storage devices and wherein the first and second storage devices have the same data sets. The Examiner cited col. 2, lines 60-67 of Le as teaching the additional requirements of these claims. (First Office Action, pg. 3). Applicants traverse.

The cited col. 2 mentions that a storage device is initially allocated to a first host to process recall requests, and that a second host recall request is initiated with a second host to recall data from the storage device. Nowhere in this cited section is there any suggestion of a flag for each data set in the first and second storage devices and that the storage devices have the same data sets. In fact, the cited Le only concerns mentions accessing one storage device by multiple hosts, not selecting one of two storage devices having the same data sets as claimed.

Accordingly, claims 4, 13, and 22 provide additional grounds of patentability over the cited art because the cited combination does not teach or suggest the additional claim requirements alone or in combination with base and any intervening claims.

Claims 5, 14, and 23 depend from claims 1, 10, and 19 and further require: accessing the data set from one of a third and fourth storage devices if the data set is in one of the third and fourth storage devices, wherein the steps of selecting one of the first and second storage devices and accessing the data from one of the first and second storage devices occurs if the data set is not in one of the third and fourth storage devices; copying the data set from the first storage device to the third storage device when accessing the data set from the first storage device; and

copying the data set from the second storage device to the fourth storage device when accessing the data set from the first storage device.

The Examiner cited col. 4, line 6 to col. 5, line 17 of Le as teaching the additional requirements of claims 5, 14, and 23. (First Office Action, pg. 3). Applicants traverse.

The cited cols. 4-5 discusses two hosts and a primary and secondary storage devices, and that data is transferred between the hosts and between the primary and secondary storages, or DASDs. This cited section further mentions that the primary and secondary storage may include a storage subsystem.

Nowhere does the cited cols. 4-5 anywhere suggest or even mention accessing the data from third and fourth storage devices if the data is there, and that the first and second storage devices are selected if the data set is not in the third or fourth storage devices.

Accordingly, claims 5, 14, and 23 provide additional grounds of patentability over the cited art because the cited combination does not teach or suggest the additional claim requirements alone or in combination with base and any intervening claims.

With respect to claims 6, 15, and 24, the Examiner cited col. 4, line 6 to col. 5, line 17 as teaching the claim requirement of recalling the data set from the third storage device if the scheduled write operation has not yet copied the requested data set to the first storage device, wherein the steps of selecting one of the first and second storage devices to access the data set and accessing the data set occurs if the scheduled write operation of the data set to the first storage device completed. (First Office Action, pg.3) Applicants traverse.

The cited cols. 4 and 5 discusses two hosts and a primary and secondary storage devices, and that data is transferred between the hosts and between the primary and secondary storages, or DASDs. This cited section further mentions that the primary and secondary storage may include a storage subsystem.

Nowhere do the cited cols. 4 and 5 anywhere suggest that the flag indicates whether a recall attempt failed, and recalling a data set from the third storage device if a scheduled write operation has not yet copied the requested data to the first storage device. Instead, the cited col. 5 discusses a wait flag indicating whether an application needs the recalled data to proceed.

Further, nowhere do the cited cols. 4 and 5 suggest selecting one of the first and second storage devices if the scheduled write operation completed.

Accordingly, claims 6, 15, and 24 provide additional grounds of patentability over the cited art because the cited combination does not teach or suggest the additional claim requirements alone or in combination with base and any intervening claims.

Claims 7-9, 16-18, and 15-27 are patentable over the cited art because they depend directly or indirectly from claims 5, 14, and 23 and for the additional limitations these claims add, which in combination with the requirements of the base and intervening claims provide still further grounds of patentability over the cited art.

Conclusion

For all the above reasons, Applicant submits that the pending claims 1-27 are patentable over the art of record. Applicants have not added any claims. Nonetheless, should any additional fees be required, please charge Deposit Account No. 50-0585.

The attorney of record invites the Examiner to contact him at (310) 553-7977 if the Examiner believes such contact would advance the prosecution of the case.

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